This section describes the existing geology, soils, and seismic conditions in the vicinity of the project area. This section analyzes the potential physical environmental effects related to seismic hazards and erosion and evaluates geotechnical problems that could affect development in the study area. Regional soils, geology, and seismicity characteristics were examined to provide a context to evaluate project-related conditions. Faulting, ground shaking, erosion, and slope and soil instability are addressed specifically this section of the EIR. Paleontological and mineral resources are also addressed in this section.

4.5.1 EXISTING SETTING

GEOLOGIC SETTING

Geologic maps of the project area identify the site as being underlain by Tioga glacial till, likely deposited between 26,000 and 10,000 years before present (Quaternary Period). The till is described as unconsolidated, gray to light tan deposits that may be preserved as sharp-crested moraines and that may include outwash deposits. The till deposits are characterized by granular soil and unweathered to slightly weathered granitic boulders. The outwash deposits generally consist of unconsolidated sand and silt, unweathered gravel, cobbles, and boulders. The ground surface is predominantly covered with rounded cobbles and some large outcroppings of boulders, amid vegetation or forest litter composed of dried and decayed vegetation.

SEISMICITY

According to the California Department of Conservation Interactive Fault Parameter Map, the project site is located in the Western Nevada Zone. The Western Nevada Zone is designated as a Type C fault zone, with low seismicity and a low rate of recurrence (Holdrege & Kull 2015, p. 4).

Information regarding the local tectonic setting was obtained by Holdrege & Kull (2015, p. 4) from a fault evaluation study performed recently in the vicinity of the project site. According to this study, the project site is located near the northwestern margin of the Lake Tahoe Basin, which is one of several fault-controlled basins that separate the Sierra Nevada from the Basin and Range province. The Tahoe region is a moderately seismically active area. Seismicity in the region is dominated by activity along the Sierra Nevada-Great Basin Boundary Zone. The zone is a seismic belt formed by a nearly continuous north- to northwest-trending zone of earthquakes and faults extending from the Garlock fault in Southern California along the eastern Sierra to the Lake Almanor region in Northern California. Earthquakes in the zone tend to concentrate along the east flank of the Sierra Nevada.

The Tahoe-Sierra Nevada frontal fault is the westernmost extensional fault bounding the Lake Tahoe Basin. Fault traces associated with the frontal fault have been mapped in various forms by several researchers. Evidence of Holocene activity on this frontal fault is equivocal. No offset of post-Tioga moraine glacial sediments or bedrock scarps was observed on high-resolution seismic sonar data where the fault crosses Emerald Bay, indicating no Holocene activity. In addition, California Geological Survey researchers have indicated that they consider the fault to be pre-Quaternary.

The potential risk of fault rupture is based on the concept of recency and recurrence. The more recently a particular fault has ruptured, the more likely it will rupture again. An "active fault" is defined as one that has had surface displacement within the past 11,000 years (Holocene). Potentially active faults are defined as those that have ruptured between 11,000 and 1.6 million years before the present (Quaternary). Faults are generally considered inactive if there is no evidence of displacement during the Quaternary.

In the Squaw Valley area, Quaternary-age deposits include the valley alluvium and glacial moraines. Most of the faults that pose a potential rupture hazard are only exposed in older bedrock and beneath the glacial moraines and valley alluvium. In addition, moraines and valley alluvium, where disturbed by development activities, may not display the subtle changes from past fault movements. Thus, determining Holocene activity or inactivity for these faults is difficult (Holdrege & Kull 2015, p. 5).

Faults

The project site is not located in an Alquist-Priolo active fault zone (Holdrege & Kull 2015, p. 4). However, several active and potentially active faults are located in the region, including the Dog Valley fault located approximately 4 miles northeast of the site; several unnamed faults in the Southern Last Chance Fault Zone and the Dollar Point Fault Zone located approximately 6 to 8 miles northeast of the site; the Polaris fault located approximately 10 miles northeast of the site (maximum magnitude earthquake 6.4 to 6.9); and the North Tahoe fault and the Incline Village Fault Zone, both located approximately 10 miles southeast of the site (maximum magnitude earthquake 6.5). In addition, four unnamed fault traces have been identified in the western portion of Squaw Valley.

Fault mapping in the Squaw Valley area has evolved over the past decade as researchers have begun using Light Imaging and Ranging (LiDAR) imagery in addition to traditional aerial photographic interpretation and field observations. As a result, mapped fault traces crossing Squaw Valley are not all consistent. The most relevant published fault maps for the Squaw Valley area depict an inferred fault crossing from north to south through the project site. An inferred fault is identified based on the surrounding geological features but cannot be observed on the surface due to the presence of recent deposits. An excerpt of this map, annotated with the approximate location of the project site, is provided as Figure 3 in **Appendix 4.5**.

Seismic Hazards

Ground Shaking Potential

There is a high potential for the proposed project to be subject to at least moderate shaking from earthquake activity one or more times over the next century. The probability of earthquake shaking (1 second frequency) in the next 50 years in eastern Placer County along the State Route 89 corridor between Lake Tahoe and Truckee is estimated to be 21 to 30 percent.

In 1996, the California Geological Survey released a probabilistic seismic hazard assessment to aid in the assessment of seismic ground shaking hazards in California. The report contains a probabilistic seismic hazard map that depicts the peak ground acceleration (Pga) values exceeded in a given region of California at a 10 percent probability in 50 years (i.e., 0.2 percent probability in 1 year). The peak horizontal ground acceleration values depicted on the map represent probabilistic estimates of the ground shaking intensity likely to occur in a given area as a result of characteristic earthquake events on active faults. They can be used to assess the relative seismic ground shaking hazard for a given region. Pga values range from a low of <0.1g to a high of >0.8g (g = acceleration due to gravity). For the region in which the project site is located, Pga values are shown to be between 0.2g and 0.3g.

Liquefaction

Liquefaction is a loss of soil shear strength that can occur during a seismic event as cyclic shear stresses cause excessive pore water pressure between the soil grains. This phenomenon is

generally limited to unconsolidated, clean to silty sand (up to 35 percent non-plastic fines) below the groundwater table. The higher the ground acceleration and the longer the shaking caused by a seismic event occurs, the more likely liquefaction will take place. Severe liquefaction can result in catastrophic settlements of large civil structures. The geotechnical engineering report prepared for the project (Holdrege & Kull 2015) concluded that the project site is suitable for development using conventional foundation footings, indicating a low potential for liquefaction.

TOPOGRAPHIC CONDITIONS OF THE PROJECT SITE

The project site exhibits variable topography. Holdrege & Kull (2015, p. 6) estimates that the site's slope gradients range from 10 to 20 percent on the western portion of the site to more than 50 percent along the ridges near the northeastern portion of the site. Site elevations range from approximately 6,150 feet above mean sea level near the northern end of the site to approximately 6,114 feet above mean sea level near the eastern boundary. The project site also features large rock outcroppings as shown on **Figure 2.0-5**.

AVALANCHE HAZARDS

The project site is not located in an area that has experienced avalanches in the past and is therefore not considered at significant risk of avalanche.

SOIL CONDITIONS

According to Holdrege & Kull (2015, p. 3), the project site is underlain by soil designated as Tallac very gravelly sandy loam complex on 2 to 30 percent slopes. The Tallac soil is described as deep, moderately well drained soil developed on glacial moraines and outwash. Tallac soil typically has a coarse texture containing a high amount of rock fragments and has a high maximum erosion hazard.

MINERAL RESOURCES

There are no mineral resources or active mineral resource recovery sites in the project vicinity.

PALEONTOLOGICAL RESOURCES

Paleontological resources include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains that are more than 5,000 years old and occur mainly in Pleistocene or older sedimentary rock units. Geologic and soil conditions in the region were created by geologic uplift resulting in deep granitic bedrock with typically shallow surface soils. Past glacial movement in the area has resulted in significant movement and disturbance of rock and soil, minimizing the potential for fossils to be present. Geologic maps of the project area identify the site as being underlain by Tioga glacial till, which is characterized by granular soil and unweathered to slightly weathered granitic boulders. There have been no recent discoveries of paleontological resources in the project vicinity and there is no evidence identifying any sensitivity for paleontological resources in the project area. Therefore, based on the preceding evidence, it is not anticipated that any paleontological resources are present on the project site.

4.5.2 REGULATORY FRAMEWORK

STATE

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 (originally enacted as the Alquist-Priolo Special Studies Zones Act and renamed in 1994) and is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults or the area within 50 feet of the surface trace of active faults (DOC 2015).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act addresses nonsurface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Passed by the State Legislature in 1990, this law was codified in the California Public Resources Code as Division 2, Chapter 7.8A, and became operative in April 1991. The act resulted in a mapping program that is intended to reflect areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. No areas in the project site are subject to the Seismic Hazard Mapping Act.

California Building Code

The State of California provides minimum standards for building design through the California Building Code (CBC [California Code of Regulations, Title 24]). The CSC is based on the Uniform Building Code, which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for conditions in California. State regulations and engineering standards related to geology, soils, and seismic activity are reflected in the CBC requirements. Through the CBC, the State provides a minimum standard for building design and construction. The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control. Placer County Code Chapter 15, Article 15.03, adopts the California Building Code as part of the County Code.

LOCAL

Placer County General Plan

The Placer County General Plan includes policies that call for the County to ensure that land uses and new development are compatible with the local geologic and soil resources. General Plan health and safety policies applicable to the proposed project are listed below.

Policy 8.A.1. The County shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (i.e., ground shaking, landslides, liquefaction, critically expansive soils, avalanche).

Policy 8.A.8. County shall continue to support scientific geologic investigations which refine, enlarge, and improve the body of knowledge on active fault zones, unstable

areas, severe ground shaking, avalanche potential, and other hazardous conditions in Placer County.

Policy 8.A.9. The County shall require that the location and/or design of any new buildings, facilities, or other development in areas subject to earthquake activity minimize exposure to danger from fault rupture or creep.

Squaw Valley General Plan and Land Use Ordinance

The following sections of the Squaw Valley General Plan and Land Use Ordinance pertain to geology and soils impact associated with the proposed project:

Section 110, Development Constraints, describes various development constraints, such as steep slopes, soils with high erosion potential, and areas with avalanche potential.

Section 118, Erosion Control, contains various requirements intended to minimize soil erosion including the preservation of trees, preparation of sedimentation and erosion control plans when grading is required, and revegetation of disturbed sites.

Placer County Avalanche Management Program

The County's avalanche management program, established by Ordinance No. 4331-B and codified in Placer County Code Article 12.40, defines Potential Avalanche Hazard Areas (PAHAs) as those areas where the minimum probability of avalanche occurrence is greater than 1 in 100 per year or where avalanche damage has already occurred. Property owners who rent their property to the public are required to post information, described below, in facilities located in PAHAs explaining avalanche hazards and available emergency services.

- Information that a structure is within a PAHA.
- A warning that avalanche control work, including the use of explosives, may be carried out and that avalanche control personnel may provide special advisories or instructions.
- A warning that authorities may attempt to contact property owners during periods of severe storm events, but that it is the responsibility of the occupants to use good judgment during such events.
- Identification of local radio stations that provide weather information, phone numbers of the Office of Emergency Services and other local emergency offices, and available brochures about avalanches.

The project site is not located within a PAHA and is not subject to the requirements of this program.

4.5.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the application of the Placer County Initial Study checklist and the CEQA Guidelines Appendix G environmental checklist. A project is considered to have a significant effect on the environment if it will:

1) Expose people or structures to unstable earth conditions or changes in geologic substructures.

2) Result in significant disruptions, displacements, compaction, or overcrowding of the soil.

3) Result in substantial change in topography or ground surface relief features.

4) Result in the destruction, covering, or modification of any unique geologic or physical features.

5) Result in any significant increase in wind or water erosion of soils, either on or off the site.

6) Result in changes in deposition or erosion or changes in siltation which may modify the channel of a river, stream, or lake.

7) Result in exposure of people or property to geologic and geomorphological hazards such as avalanches, earthquakes, landslides, mudslides, ground failure, or similar hazards.

8) Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

9) Be located on expansive soils, as defined in Chapter 18 of the California Building Code, creating substantial risks to life or property.

ENVIRONMENTAL IMPACTS NOT DISCUSSED FURTHER

Because significant paleontological resources are not expected to occur in the project area, this issue is not discussed further in this Draft EIR.

The proposed project does not propose any modification to Squaw Creek; no direct impacts or changes to deposition, erosion, or siltation that would modify the creek's channel would occur. Water quality issues associated with soil erosion are addressed in Section 4.8, Hydrology and Water Quality.

The project would not result in the loss of access to mineral resources; the subject is not further addressed in this Draft EIR.

METHODOLOGY

The following impact analysis is based on the geotechnical engineering report prepared for the proposed project by Holdrege & Kull in July 2015 (see **Appendix 4.5**) as well as review of the project site and other technical studies pertinent to the region.

PROJECT IMPACTS AND MITIGATION MEASURES

Surface Fault Rupture (Standard of Significance 1)

Impact 4.5.1 An inferred earthquake fault has been mapped across the eastern portion of the project site, requiring further evaluation to determine its potential for surface rupture. This impact would be **potentially significant**.

As described previously, the most relevant published fault maps for the Squaw Valley area depict an inferred fault crossing from north to south through the project site. An inferred fault is identified based on the surrounding geological features but cannot be observed on the surface due to the presence of recent deposits. Because the inferred fault crossing the project site could not be observed during field investigation performed by Holdrege & Kull (2015), further investigation is necessary to identify its precise location and recency and determine its potential for surface rupture. This impact would be **potentially significant**.

Mitigation Measures

MM 4.5.1 **Fault Analysis and Implement Setbacks.** The Improvement Plan submittal shall include a geologic investigation report produced by a geologist registered with the State of California for County review and approval prior to the approval of Improvement Plans. The report shall be based on a geologic investigation designed to identify the location, recency, and nature of faulting that may affect the project site in the future. If an active fault is identified, the geologic investigation shall establish necessary setbacks (generally 50 feet) and other design parameters for the proposed development as required by the Alquist-Priolo Earthquake Fault Zoning Act.

Implementation of mitigation measure **MM 4.5.1** would reduce this impact to **less than significant** by ensuring that if an active fault exists within the project site, the proposed project design is modified to comply with the setback requirements of the Alquist-Priolo Earthquake Fault Zoning Act and that associated risks to structures and public safety are minimized. Implementation of this mitigation measure would be consistent with General Plan Policy 8.A.9.

Strong Seismic Ground Shaking and Failure (Standard of Significance 1)

Impact 4.5.2 The project site and the surrounding region are subject to the risk of strong seismic ground shaking and failure, including liquefaction, in the event of a significant earthquake. This impact would be **less than significant**.

According to the geotechnical engineering report prepared for the proposed project (Holdrege & Kull 2015, p. 3), the project site is located in the Western Nevada Zone, which exhibits low seismicity and a low rate of recurrence. Regardless, there is potential for the proposed development to be subject to strong seismic ground shaking from earthquake activity in the future, resulting in safety hazards if the proposed structures are not properly designed and constructed. The proposed building foundations and structures would be required to be designed to meet County building seismic standards as well as the seismic design criteria provided in the geotechnical engineering report (Holdrege & Kull 2015, p. 23). Compliance with the County's standards and the site-specific seismic design criteria developed for the project would minimize the risk to structures and the public in the event of an earthquake. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

Alter Site Topography and Surface Relief Features (Standards of Significance 3 and 4)

Impact 4.5.3 The proposed project would alter site topography and surface relief features. However, the proposed layout grading of the development would consider

the natural topography of the site by preserving the large rock outcroppings present on the site and the northeastern portion of the site, which exhibits steep slopes. Therefore, this impact would be **less than significant**.

As described previously, the project site exhibits variable topography and unique geologic features including steep slopes and large rock outcroppings. As shown on **Figure 2.0-2**, the northern and eastern portions of the site are proposed to remain as open space, thereby preserving those portions of the site that exhibit steep slopes. In addition, the proposed residential lots are arranged to preserve the large rock outcroppings located near the center of the site. While the proposed project would change the topography and ground surface relief features within the proposed residential lots and roadway corridors, the site's more significant features would be retained and incorporated into the project design. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

Avalanche Hazards (Standard of Significance 7)

Impact 4.5.4 The project site is located in a region potentially subject to avalanche hazard. This impact would be **less than significant**.

Avalanche hazards are regulated by Placer County through implementation of Article 12.40 of the Placer County Code, also known as the Placer County Avalanche Management Ordinance. This ordinance establishes Potential Avalanche Hazard Areas (PAHAs), which are areas that have potential for avalanche due to steepness of slope, snowpack composition, or other factors and within which new construction is prohibited. The project site is not located within a PAHA or in an area that has experienced avalanches in the past and is therefore not considered at significant risk of avalanche. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

Unstable Soil or Geologic Unit (Standards of Significance 1, 2, 5, 8, and 9)

Impact 4.5.5 Project implementation would require cuts and fills and excavations that could become unstable if not properly designed and constructed. This impact would be **potentially significant**.

Implementation of the proposed project would require land clearing, grading, excavating, and other soil-disturbing activities, thereby exposing soils to wind and water erosion and resulting in soil displacement and/or compaction. Water may further erode the topsoil as it moves across the surface and drains into Squaw Creek. Additionally, the use of heavy construction equipment on the site could result in soil compaction in areas not proposed for development.

All construction activities would be subject to California Building Code Chapter 70 standards, which would ensure implementation of appropriate measures during grading activities to reduce soil erosion. The project would also be subject to the provisions of the Placer County Code, Chapter 15, Article 15.48, Grading, Erosion and Sediment Control, in effect at the time of tentative map submittal. Pertinent provisions include maximum cut/fill slopes, revegetation of all

disturbed areas, implementation of proper erosion control measures in stockpiling and borrow areas, and provision of a winterization plan. In addition, Section 118, Erosion Control, of the Squaw Valley General Plan and Land Use Ordinance requires the preparation and implementation of a sedimentation and erosion control plan containing measures to minimize soil erosion, as well as revegetation of disturbed areas.

The project applicant would be required to prepare and comply with a stormwater pollution prevention plan (SWPPP) that would provide a schedule for the implementation and maintenance of erosion control measures and a description of erosion control practices, including appropriate design details and a time schedule. The SWPPP would consider the full range of erosion control best management practices (BMPs), including any additional site-specific and seasonal conditions. Additionally, the State Water Resources Control Board (SWRCB) adopted a Construction General Permit (CGP) (Order No. 2009-0009DWQ) and an associated amendment that provide additional standards and requirements to avoid soil erosion.

The geotechnical engineering report prepared for the proposed project (Holdrege & Kull 2015, p. 12; **Appendix 4.5**) did not identify any unstable soil or geologic conditions and concluded that the project site is suitable to support the proposed development, provided that the geotechnical engineering recommendations and design criteria presented in the report are incorporated into the project's development plans. These recommendations include limitations on the steepness of grading and cut and fill slopes, both temporary and permanent.

Mitigation Measures

MM 4.5.5a **Submit Improvement Plans for Review and Approval.** The applicant shall prepare and submit Improvement Plans, specifications, and cost estimates (per the requirements of Section II of the Placer County Land Development Manual [LDM] that are in effect at the time of submittal) to the County's Engineering and Surveying Division (ESD) for review and approval. The plans shall show all physical improvements as required by the conditions for the project as well as pertinent topographical features both on- and off-site. All existing and proposed utilities and easements, on the site and adjacent to the project site, which may be affected by planned construction, shall be shown on the plans. All landscaping and irrigation facilities within the public right-of-way (or public easements) or landscaping within sight distance areas at intersections shall be included in the Improvement Plans. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the first Improvement Plan submittal. (Note: Prior to plan approval, all applicable recording and reproduction costs shall be paid.) The cost of the above-noted landscape and irrigation facilities shall be included in the estimates used to determine these fees. It is the applicant's responsibility to obtain all required agency signatures on the plans and to secure department approvals. If the design/site review process and/or Development Review Committee (DRC) review is required as a condition of approval for the project, said review process shall be completed prior to submittal of Improvement Plans. Record drawings shall be prepared and signed by a California registered civil engineer at the applicant's expense and shall be submitted to the ESD in both hard copy and electronic versions in a format to be approved by the ESD prior to the County's acceptance of site improvements.

Conceptual landscape plans submitted prior to project approval may require modification during the Improvement Plan process to resolve issues of drainage and traffic safety.

MM 4.5.5b **Grading, Revegetation, and Winterization Requirements.** The Improvement Plans shall show all proposed grading, drainage improvements, vegetation, and tree removal, and all work shall conform to provisions of the County Grading Ordinance (Article 15.48, Placer County Code) and Stormwater Quality Ordinance (Article 8.28, Placer County Code) that are in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the Development Review Committee (DRC). All cut/fill slopes shall be at a maximum of 2:1 (horizontal: vertical) unless a soils report supports a steeper slope and the Engineering and Surveying Division (ESD) concurs with said recommendation. Fill slopes shall not exceed 1.5:1 (horizontal: vertical).

The applicant shall revegetate all disturbed areas. Revegetation undertaken from April 1 to October 1 shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It is the applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization before, during, and after project construction. Soil stockpiling or borrow areas shall have proper erosion control measures applied for the duration of the construction as specified in the Improvement Plans. The plan shall provide for erosion control where roadside drainage is off of the pavement to the satisfaction of the ESD.

The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate for winterization and permanent erosion control work prior to Improvement Plan approval to guarantee protection against erosion and improper grading practices. Upon the County's acceptance of improvements and satisfactory completion of a one-year maintenance period, unused portions of said deposit shall be refunded to the project applicant or authorized agent.

If, at any time during construction, a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the DRC/ESD for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the DRC/ESD to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body.

MM 4.5.5c **Provide Final Geotechnical Subsurface Investigation.** The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California registered civil engineer or geotechnical engineer for Engineering and Surveying Division (ESD) review and approval. The report shall address and make recommendations on the following:

- Road, pavement, and parking area design

- Structural foundations, including retaining wall design (if applicable)
- Grading practices
- Erosion/winterization
- Special problems discovered on-site (i.e., groundwater, expansive/unstable soils, etc.)
- Slope stability

Once approved by the ESD, two copies of the final report shall be provided to the ESD and one copy to the Building Services Division for its use. It is the developer's responsibility to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

MM 4.5.5d **Water Quality Permit Coverage.** Prior to Improvement Plan approval, the applicant shall obtain a State Regional Water Quality Control Board National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit and shall provide to the Engineering and Surveying Division evidence of a state-issued Waste Discharge Identification (WDID) number or filing of a Notice of Intent and fees.

MM 4.5.5e **Implementation of Best Management Practices.** The Improvement Plans shall show that water quality treatment facilities/best management practices (BMPs) shall be designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development/Redevelopment, and for Industrial and Commercial (or other similar source as approved by the Engineering and Surveying Division (ESD), such as the Stormwater Quality Design Manual for the Sacramento and South Placer Regions).

Construction (temporary) BMPs for the project include but are not limited to waterbars, hydroseeding (EC-4), silt fence (SE-1), construction fencing, wind erosion control (WE-1), stabilized construction entrance (TC-1), storm drain inlet protection (SE-10), staging areas, dripline trenches, and revegetation techniques.

MM 4.5.5f **Improvement Plan Measures for Water Quality Protection.** The Improvement Plan submittal shall include the following requirements:

- There shall be no grading or other disturbance of ground between October 15 of any year and May 1 of the following year, unless a Variance has been granted by the Lahontan Regional Water Quality Control Board (RWQCB) and the Placer County ESD.
- Truck routes are to be located across existing logging roads and constructed seasonal spur roads proposed with this project.
- Existing drainage patterns shall not be significantly modified.

- During construction, temporary gravel, straw bale, earthen, or sandbag dikes and/or nonwoven filter fabric fence shall be used as necessary to prevent discharge of earthen materials from the site during periods of precipitation or runoff.

- Revegetated areas shall be continually maintained in order to ensure adequate growth and root development. Erosion control facilities shall be installed with a routine maintenance and inspection program to provide continued integrity of erosion control facilities.

Implementation of the above mitigation measures would ensure soil and slope stability of the project site and would address potential soil erosion impacts. Thus, this impact would be reduced to **less than significant** with the implementation of these mitigation measures.

4.5.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

Geotechnical impacts tend to be site-specific rather than cumulative in nature. For example, seismic events may damage or destroy a building on the project site, but the construction of a development project on one site would not cause any adjacent parcels to become more susceptible to seismic events, nor can a project affect local geology in such a manner as to increase risks regionally. Impacts regarding surficial deposits, namely erosion and sediment deposition, however, can be cumulative in nature within a watershed. The reader is referred to Section 4.8, Hydrology and Water Quality (Impact 4.8.6), for a discussion of cumulative water quality impacts from soil erosion.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Geology Impacts (Standards of Significance 1–4 and 7–9)

Impact 4.5.6 Development of the project site would not contribute significantly to any impacts related to geology or seismicity. This impact would be **less than cumulatively considerable**.

Impacts associated with seismic activity, slope stability, and avalanche are based on existing site-specific conditions in the subsurface materials that underlay the project site. These inherent conditions are an end result of natural historical events that occur through vast periods of geologic time and are not based on cumulative development. With proper evaluation of these conditions, compliance with existing codes and standards, and implementation of mitigation measures included in this section (**MM 4.5.1** and **MM 4.5.5a** through **MM 4.5.5f**), the proposed project would not contribute to cumulatively considerable impacts related to seismic hazards, soil stability, and avalanche. Therefore, this impact would be **less than cumulatively considerable**.

Mitigation Measures

No additional measures are required.

REFERENCES

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